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American Society of Parasitologists Newsletter, v. 30, no. 3, Fall 2008

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American Society of Parasitologists

Newsletter

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From the *Editor* of the Newsletter

Consider publishing your parasite poems, posting a link to your favorite "parasite lecture," providing an actual parasite lecture, or otherwise send "something" in to the editor. Your contribution is valuable and anything sent in to me will be considered for publication. See below.

This is the last ASP newsletter before the presidential election of 2008. Get out and vote. If you are a biologist - also try to do something about biodiversity and habitat loss. Yesterday's CITES REDLIST release now shows that more than 20% of the species of mammals are in danger of extinction in the near future. My personal travel for research to far away lands shows that there is no evidence of a slowing of wholesale ecosystem devastation. We are beginning to suffer from landscape amnesia - most of us have forgotten what a real pristine habitat looks like. Do something before it is way too late.

Sincerely,

Scott Lyell Gardner, Ph.D.

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MEETING DATA

PLAN FOR THE 2009 ASP MEETING [Knoxville, TN].

The 2009 ASP Annual meeting will occur at the Crowne Plaza Hotel in Knoxville, TN, from 13-17 August, 2009. You can visit the Crowne Plaza web site at: http://www.crowneplaza.com, for more information on the Knoxville edition of the hotel. Sharon Patton and Charles Faulkner will be the co-chairs of the Local Committee. Watch for more information both on the ASP web site and in the Journal.

Next Meetings for the ASP are planned:

2010; 22-25 June, Colorado Springs, CO

Other Meetings.

THE XIITH INTERNATIONAL CONGRESS OF PARASITOLOGY (ICOPA) (2010).
To be held in Melbourne, Australia, from **15-20th August 2010** at the new Exhibition and Convention Centre. All are invited to join the parasitology community at this exceptional facility that lies in the heart of Melbourne in close proximity to the scenic Yarra River and the associated parks, multicultural restaurants, cafes and bars.

57TH ANNUAL MEETING OF THE AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE (ASTMH) 2008
The annual meeting of ASTMH will be held on December 7-11, 2008 at the Sheraton New Orleans, New Orleans, LA. Information about the annual meeting can be obtained by contacting ASTMH Headquarters at - http://www.astmh.org.

International Biogeography Society Fourth Biennial Meeting
January 8-12, 2009
Merida, Mexico
http://biogeography.org

Check the web site of David Gibson for more meeting data:
http://www.diplectanum.dsl.pipex.com/purls/index.htm

FIELD PHOTOGRAPHY - *A FEATURE OF THE ASP NEWSLETTER*

Although not the real *Field* - these images were taken by slg during a recent trip to work at FIOCRUZ in Rio de Janeiro, Brazil. Agustin Jimenez-Ruiz and Scott Gardner attended a national symposium on biological collections and studied specimens in the extensive collections of FIOCRUZ. Photos are of the Castle which was designed and built by Oswaldo Cruz for the study of parasites and diseases of public health importance in Brazil. Photos by SLG.

TAXONOMY AS ART - The delicate dance of scientific realism and abstractions of reality.

By *Thomas R. Platt*
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Saint Mary's College
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Taxonomy as Art

I do not consider myself an artist. Even after having an art show entitled "Taxonomy" at the Moreau Gallery at Saint Mary's College (http://www.moreauartgalleries.com), where I am a member of the biology faculty, I still don't consider myself an artist. I do illustrations for taxonomic publications focusing primarily on digenetic trematodes of the family Spirorchiidae (Schistosomatoidea). Artists know something about color,

Fig. 1. Dr. Platt discussing art and taxonomy at his first opening at the Moreau Gallery at Saint Mary's.

composition, perspective and attempt to convey more than just what they see. While I am familiar with the concepts, I would have no idea how to convey them on paper and they play no role in the drawings I produce. There are many other taxonomists in the biological sciences who are much better illustrators. So how did I end up having an art show? Could you have one? Should you have one?

Late last April (2008) I received an e-mail from Krista Hoefle, a member of our Art Department and the Director of the Moreau Galleries at Saint Mary's. Krista wanted to know if anyone in our department did drawings or took photographs that might be used as the basis for a display for the opening exhibition of the 2008-2009 academic year. I dutifully forwarded her note to the other members of the department. I also debated whether to send her any of my drawings. Throwing caution (and my sense of dignity) to the wind, I replied and attached a file containing a scanned image of *Buckarootrema goodmani* (Digenea: Pronocephalide) that I had described with Dan Brooks in a 2001 publication in JP. I indicated that these are the kinds of drawings I do and if she was interested I had more. Before I left for the day Krista replied that she was very interested and we made arrangements for her to come to my office to look at the originals.

A few days later Krista was in my office and I had a dozen or so "worm" drawings spread out on the floor. Krista is an elfin presence. She has a perpetual smile and more energy than any adult has a right to. She was quite excited and "definitely" wanted to use my drawings as part of the opening for the Moreau Galleries. Krista left with the promise that she would be in touch during the summer to select the "pieces" she wanted to display. I was certain that she would think better of this rash decision so I kept mum about the prospect of this event actually taking place.

Fig. 2. Art afficionados becoming enthused about parasite biodiversity and taxonomy at the Moreau Gallery.

In mid-June Krista was back and chose a number of my drawings to display. I provided her with copies of the publications in which they appeared. I never thought I would be giving out reprints to the director of an art gallery! Because the originals were of various sizes and the paper on which some were done had yellowed (they

Fig. 3. Admirer of Taxonomy as Art during the opening of Dr. Platt's first art show.

were over 15 years old!), Krista decided to scan them and print them on art stock in a uniform size. Then there was the question of a name for the exhibit. I recall Krista suggesting something like "Weird Bugs", but I prevailed with "Taxonomy" in an attempt to avoid the lurid and let visitors develop some appreciation for the discipline: what it is, what we do, and how we do it. To that end I wrote a brief description that provided an introduction to the discipline, what the drawings were, and how they were made (see below, -ed.). I also wrote four poems that provided a chronology of worm hunting, taxonomy, and biological nomenclature (see below, too -ed.).

I shared the opening with Dominic Paul Moore (Chicago) and Paul Campbell (New York City), who had an exhibit entitled "Profile Me" based on the Face Book and MySpace phenomenon, and paintings by Gianna Commito, and artist from Kent State University. I spent 2 surreal hours drinking wine (which reduced my anxiety) explaining to the small cadre of students, faculty and visitors what they were looking at, how the drawings were produced, and why on earth anyone would do this kind of thing (See figs. 1-4)! I did have fun explaining what our discipline is and why it is important. I am sure I raised the consciousness of everyone I spoke with. I also enjoyed talking to the "real" artists trying to convince them that what I do is not art, while they tried to convince me that it was. The debate was a draw and I will have to rate the evening as one of the more unusual events in my not-quite 60 years.

Fig. 4. Tom Platt's "Taxonomy as Art" in action at Saint Mary's College

One of the most gratifying outcomes of this experience wasn't people telling me that they "loved" what I did (although who doesn't like a little stroking, sincere or not), but the fact that people with whom I have worked with for over 2 decades actually found out what I do when I am not teaching and attending meetings. Most faculty

have little idea what their colleagues in other departments do in the way of research. My "art show" served as a catalyst for conversations that would have never happened otherwise.

Could you have an art show? Why not! One of the primary reasons I suggested this piece for inclusion in the newsletter was to encourage members of ASP who do taxonomic work or do interesting photography to attempt to replicate the event. I suspect that most small schools with an art department also have a gallery. Funds for bringing in outside exhibits are often limited and many directors would, I hope, seriously consider presenting your work which would cost them next to nothing. Print this article and show them that it has been done elsewhere and it was well received. Who knows, we might be able to start a guerrilla movement in parasitological art. Should you have and art show? Absolutely! Why should Bill Campbell have all the fun? (See Fig. 3).

My career as an artist is over. The show closed on September 26th. I did get all the prints Krista made for the exhibit and the show will live on - for a time - in the hall outside my office. I have already had some fun talks with students who have no idea what I do.

Oh, did I sell any prints? I had one offer from a colleague in the math department. I told her that I would give her the print when the show closed. One of my biology buddies suggested I should charge her a dollar just so I could lay claim to being a professional artist. That bill is in a frame on my wall. Now I have to decide whether to report it to the IRS.

Taxonomy (by Thomas R. Platt)

Taxonomy - "The theory and practice of describing, naming and classifying organisms." Lincoln, R.J., G.A. Boxshall, and P.F. Clark. 1982. A dictionary of ecology, evolution and systematics. Cambridge University Press, Cambridge, 298 p.

Taxonomy is the foundation of biology. Every organism must have a unique binomen consisting of a genus and species name rendered in Latin. This practice dates to the work of Carl von Linne , better known as Linnaeus, in 1758. Current estimates of the number of extant (currently living) species ranges from 10-100 million. Of these, approximately 2 million have been formally described. The goal of the current biodiversity movement is to describe the remainder before they are overtaken by extinction.

Formal description entails publication of a written description and illustrations that provide characters differentiating the new species from all others described. The illustrations may be photographs or line drawings (see Fig. 4), but they must show the relevant features that enable future workers to clearly identify the species at a

later date. Line drawings are generally considered superior to photographs because they tend to demonstrate the critical features more clearly.

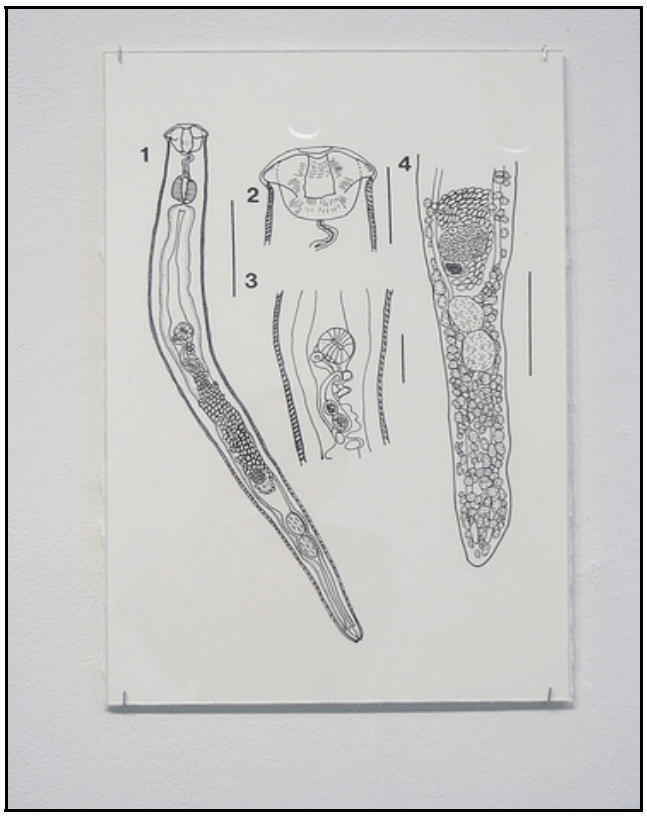

Fig. 5. *Auriculotrema lechneri* on display in "Taxonomy as Art," Saint Mary's College.

The illustrations in this exhibit are of parasitic worms (Phylum Platyhelminthes) collected from the circulatory and digestive systems of turtles in different parts of the world. The actual size of these animals ranges from approximately 1 to 3 mm (0.04 to 0.1 inches) in length.

In this case, the specimens are obtained by careful dissection of a turtle and collecting the worms found. The worms must then be killed and fixed to prevent decay - embalming of sorts. The worms are then stained to show their internal structure and mounted on microscope slides for examination.

Drawings are done initially in pencil with the aid of a camera lucida attached to the microscope. Extreme care is taken to accurately depict the general structures of the organism as well as those specific features necessary to differentiate it from all other forms of life. The pencil drawing is then rendered on vellum in India ink. In short, I do a lot of tracing! The written description and illustration(s) are submitted to a journal for consideration for publication. The journal's editor will send the manuscript to several experts in the field for comment (this is called peer review -ed.). If the reviews are favorable, the paper is accepted for publication. Once published, the name becomes part of the scientific literature and is recognized as a validly named species. (One other item worthy of mentioning is that taxonomists *pay* to have their work published, they do not get money for individual papers published. Depending on the journal, the author usually forks out cold cash for page charges, any corrections on the proofs, and any offprints over a standard free number from the journal publisher -ed).

Thomas R. Platt, Ph.D., has been a member of the Department of Biology of Saint Mary's College since 1986. Tom obtained his B.A. from Hiram College (1971), M.S. from Bowling Green State University (1973), and Ph.D. from the University of Alberta (1978). He is the author, or co-author, of approximately 50 peer-reviewed papers and is considered an expert on the trematode family Spirorchiidae. He has had no

training in art, formal or informal - as if you couldn't tell, and from time-to-time writes poetry - or some semblance thereof.

Tom would like to thank Krista Hoefle for thinking that what he does is worth looking at and giving him the opportunity to share his work with people who would never willingly peruse an issue of the Journal of Parasitology, Comparative Parasitology or Systematic Parasitology, the journals in which most of his work has been published.

All photographs compliments of Krista Hoefle, 2008.

Poems by Thomas R. Platt -

The Game

It may hide in the blood or the gut or the lungs.
It does not want to be found.
Discovery is death.
Natural selection has prepared it
To hide from antibodies and
Killer T-cells,
Enzymes and
Macrophages.
But scalpel and forceps strip away
layers of skin and muscle,
To lay bare my quarry,
For fixation in formalin,
Staining and mounting in balsam,
Microscopic examination.

But the rules of the game are clear.
I must know what I found,
I must give it a name.
I must share its identity with all who
want to know.
It is the least I can do.

What's in a Name?

Taxonomists,
foot soldiers of biology.
Revealing
the diversity of life on Earth.
Describing
things no one has seen,
Giving names,
identity.
And the names drive you crazy.
Forgotten Latin from Mrs. Wilson's 8th grade class.
Why would anyone call something
– anything – *Griphobilharzia amoena*?*
But names can be as beautiful and mysterious as
the life they describe,
A beautiful mystery – if you wish.

*Platt, T.R., D. Blair, J. Purdie and L. Melville**.** 1991. *Griphobilharzia amoena* n. gen., n. sp. (Digenea: Schistosomatidae), a parasite of the freshwater crocodile, *Crocodylus johnstoni* (Reptilia; Crocodylidae) from Australia, with the erection of a new subfamily, Griphobilharziinae. *Journal of Parasitology* **77:** 65-68.

It Is Not Art

It is not art,
what I do.
I draw only what I see.
I draw without interpretation
or creativity.
I draw only what they need to see.

A shadow on the cave wall,
in crisp black and white.
The essence of the ideal transferred
to paper by my unsteady hand.
The ideal, its essence extracted, mounted
on a slide,
tucked safely in
a museum drawer.

Someday, someone will open the drawer
And attempt to reunite essence
and ideal.
If I have done my job,
She will see what she needs to see.
What I saw, and
the two will fit perfectly.
The shadow will prove Plato's thesis.

But it is not art.

Science and Stamp Collecting

Doyens of the laboratory,
Clad in perfect white lab coats
Makers of hypotheses and experiments,
Call it stamp collecting –
not Science.
And yet,
When they report their results of
experiments on
Schistosoma mansoni, or
Mus musculus, or anything else
They must attach a name,
a stamp,
To validate their Science.

The Dick and John Column Number 6

Dear Dick & John:

Thank you for your assistance helping me face retirement. I have built a chair with my textbooks, as you recommended in a previous column. Above it hangs the mobiles constructed with my reprints and paperclips, which I also made following your instructions. These activities have really helped, but I still have one major problem.

At night, I periodically wake up in a cold sweat wondering whether or not I should renew my subscriptions to scientific journals. Several, like "Current Contents," I know that I will not really need nor use in retirement, and there are others, such as "Soil & Sediment Contamination," I probably will no longer read. The few extra dollars saved would allow me to take more extended trips to far away places. However, I also know that once I stop reviewing the literature via reading "Science" or "The Journal of Parasitology," I will truly be out of science. It is at these moments that I wake up and the cold sweats begin.

Has this ever happened to you? And what do you advise?

Signed: An Anxious Parasitologist.

Dear Anxious,

The answer to your first question is that both of us are still debating the question as to what journals to retain and renew. The idea of stopping all subscriptions also caused us deep anxiety, cold sweats, and the blues. And as a result of the anxiety that we share with you, there have been many discussions of how can one retire and avoid being "out of science." We have always believed that old parasitologists never die, they fade away, last seen poking through fresh road-kill.

So what do we do, and what are our answers to your important questions.

a.) First, once a parasitologist, always a parasitologist. There is an unbreakable bond between parasitologists and their love of the host-parasite relationship. Remember the joy and excitement of simply fingering through the pages of a parasitology text or a book on tropical medicine. It is what has kept us young for all these years! So we believe that if you too wish to remain young, it is essential to retain your subscription to the Journal of Parasitology. For any true parasitologist, the shock of ridding your bookshelf of the Journal of Parasitology would be too great and only hasten the aging process. You could find yourself mumbling "What was it we used to do?" [In making this recommendation, we strongly deny any political pressure from the Editor of the Journal of Parasitology, Officers of the Society or any sponsorship by Allen Press.]

b.) Once you have dealt with the logical decision to keep the JP, you must now decide as to which, if any, other journals and subscriptions to maintain. One option is to decrease your subscriptions gradually; dropping one subscription this year and then making a decision on the others later (just like the nicotine patch for smokers). Or you can simply go cold turkey and delete all the other journal subscriptions at once. Which option you chose depends on the strength of your cardiovascular system. One of us (DS) opted for the first suggestion, a gradual withdrawal. For example, he finally decided to throw out all of his reprint request cards. This really means the deletion of all of his Current Content type subscriptions. It was a very major step towards true retirement for DS and greatly eased his anxiety. However, he is not ready (nor strong enough) to stop his subscription to Trends in Parasitology. His subscription to the Annals of Cane Carving and the AARP Magazine are not yet an adequate substitute for Trends in Parasitology. He debated about a subscription to Playboy but decided against it when he realized that it might only cause greater anxiety! In addition, his wife wouldn't pay for the subscription. Bottom line, DS recommends a gradual withdrawal.

c.) JO's answer is very simple: Keep your subscription to the Journal of Parasitology. Its monthly arrival will warm your heart and tickle your neurons. Cancel all the rest! They are all on line. While my colleague DS still retains reprint cards (antiques of the snail mail era and probably worth big bucks on Ebay), most of us have given up stamps for keyboards.

Now, JO understands that some about-to-be-retirees are not particularly computer savvy and that trifocals do not lend themselves to reading multiple pages on that tiny computer screen. But, not to despair, there are two solutions. First, consider whether retirement is a significant enough bench mark that you would consider replacing that old 30 megabyte hard drive desktop computer and 12" monitor that your department bought from Radio Shack and a dial up service? A new computer with a terabyte hard drive, a huge flat screen (to compensate for aging eyesight) and a high speed internet connection will bring the latest issues of scientific journals to you in seconds. Think of it, you can search the literature from home whenever

anxiety sets in. And besides if you buy a big enough monitor you can choose to sit back and watch the final four in high definition.

Alternatively, if a new computer is not in the wind, every college or university library, I have visited, has a group of kindly and understanding librarians willing to point out the location of current and shelved journal issues. After maintaining a multitude of journal subscriptions, many faculty members about-to-be-retirees have not been to their institution's library for years and have forgotten about what a welcoming and tranquil place the library can be. This setting may help you curb the anxiety of not having your journal issues arrive in you personal mail.

d.) If you are statistically inclined, here is an alternative suggestion to JS's solution of metering down your subscriptions by dropping a single or a few subscriptions each year. Do not cancel any subscriptions. Keep an indelible marker on the end table adjacent to your favorite reading chair. On the arrival of each journal, record that date on the cover and place all issues in a neat stack on the end table. (Our spouses and partners will appreciate your effort at orderliness. Remember this is not your university office!) When you pick up the issue to peruse its Table of Contents, record that date on the cover as well. Finally, when you sit down with the issue to read an article in its entirety (no cheating, entirety means Abstract to Discussion), record the date on the cover. At the end of the subscription year, record the number of days between arrival and scanning ("a-s") for each issue as well as the days between scanning and reading an entire article ("s-ea"). (If you scan the Table of Contents on the day of arrival, this will be consider an "a-s = 1".) Calculate the standard deviation (SD) for both a-s and s-ea for the year's issues. A good rule of thumb is: if more than half of s-ea values are 0 or if the $SD^{s\text{-}ea}$ is 10x greater than $SD^{a\text{-}s}$ then it is time to X the journal subscription. Therefore, you may find that all, some or none of your subscriptions are worth keeping.

The above suggestion (d.) we believe is not only of value in reference as to which journal subscriptions to keep but could be an interesting scientific exercise! You could for example, plot the number of articles scanned or read after a full moon or after a weekend visit with George Dickel and other academic philosophers. The types of articles read versus the number of pages/ article might prove to be a valuable statistic, pointing the way toward journals you find of most interest. There are any number of valuable avenues that could be explored while determining which journals to keep. If you decide to maintain any journals for a second year continue to keep the records suggested and determine if the standard deviations change the second year. The statistical data, as they change from year to year, will indicate which subscriptions are still worth keeping.

We hope these coping mechanism allay your anxiety.

Dick and John, Brothers in Parasitism

Remember our motto is "you are never too young to consider retirement." We are only here to help you over those retirement hurdles. Write us if you have problems. The Dick and John Retirement Consults, Inc. are only here to serve you.

The authors of this column might be or might not* be found at the following:

John Richard Seed, Professor Emeritus
rseed@email.unc.edu

John Adams Oaks, Professor Emeritus
oaksj@svm.vetmed.wisc.edu

ZZZZzzzzzzzzz What was that again?

* remember they are retired!

POSITIONS OPEN OR JOBS

Research opportunity for Post-Doctoral Reearch-Biochemistry or Parasitology:

Contact: Patty Wilkins, Ph.D. by email: pwilkins@cdc.gov

The Immunochemistry Laboratory in the Division of Parasitic Diseases at CDC in Atlanta has an immediate opening for a postdoctoral fellow in Biochemistry or Parasitology that will build on our current expertise in one- and two-dimensional liquid chromatographic and gel-electrophoretic methods to identify novel targets of the host immune response that may be developed into diagnostics. The goal of the work is to develop novel diagnostic methods for a variety of parasitic diseases including detection of host immune molecules and parasite antigens. This work will include protein purification and characterization of native parasite molecules, DNA cloning of recognized or novel antigens, and development of methods for/and purification of recombinant antigens expressed in bacterial and eukaryotic systems. The ideal candidate has a Ph.D. in Biochemistry or Parasitology, with proven experience in protein chemistry. Data organization and

data management skills are required. The ability to deal with an existing lab team of 5-10 staff and domestic and international collaborators in an amicable manor is important.

Among The Laboratory's achievements are several important diagnostic tests that are commonly used by the infectious disease community, among them are the FAST-ELISA and immunoblots for schistosomiasis, immunoblots for cysticercosis-using native and recombinant molecules-and ELISA assays for strongyloidiasis. We also collaborate actively with scientists engaged in the development of control strategies for cysticercosis in Latin America and Africa. Occasional foreign travel may also be required.

Recruitment for a parasitologist for the US Food and Drug Administration.
They are interested in finding a person who would be interested in "food-borne parasites".
The contact is :

Atin Datta, Ph.D.
DVA/OARSA/CFSAN
Food and Drug Administration
8301 Muirkirk Road
Laurel, Md. 20708
(301) 210-6084
atin.datta@fda.hhs.gov

Postdoctoral Research Associate

The Natural History Museum, Department of Zoology

We are seeking to appoint a highly motivated and productive Postdoctoral Research Associate to join a new programme of research entitled "Developmental genes in the life cycle of a parasitic flatworm". This work seeks to characterize the roles of key homeotic genes in the processes of metamorphosis and segmentation in tapeworms and represents a major component in understanding the genetic processes underlying the evolution of parasitism in flatworms (see Olson. 2008. Parasitol Int 57:8-17). The successful candidate will use gene expression and suppression techniques in a beetle and mouse-hosted tapeworm model to explore the roles of Hox, ParaHox and other relevant genes (eg. -catenin). Techniques including whole-mount and genomic ISH, PCR-RACE, and Q-PCR will be employed, and methods for RNA interference will need to be adapted to a cestode model.

The post is funded by the BBSRC for up to three years and will be undertaken within the well-equipped laboratories of the Natural History Museum in South Kensington under the supervision of Dr Peter Olson. The appointment will be on a Band 5 pay scale starting at 29,000 pa.

Applicants should possess a background in molecular biology, parasitology or evolutionary developmental biology, with a Ph.D. in a related subject area. Significant experience in genetic manipulation including RNA-based techniques and a willingness to work with live animal cultures are prerequisites, and experience with gene expression and functional genomic techniques such as ISH and RNAi is highly desirable. The successful applicant will have a strong publication record and proven experience in applying one of more of these multidisciplinary skills to a singular research question within or outside the field of parasitology.

Applications including a short CV, list of publications, names of three referees willing to provide a letter of recommendation upon request, and a brief statement on interest and qualifications should be sent to: p.olson@nhm.ac.uk

Closing date for applications: Oct 15, 2008.

Dr Peter D Olson
Department of Zoology
709 Darwin Centre
The Natural History Museum
Cromwell Road, London SW7 5BD
United Kingdom

SCIENCE DEBATE 2008

At last, as promised, both Obama and McCain have provided their full answers to the 14 questions about science developed by a multitude of science organizations.

Their answers, side by side, are at this link

http://www.sciencedebate2008.com/www/index.php?id=42

First Announcement: American Society of Parasitologists, 84th Annual Meeting, August 14-17, 2009

Knoxville Tennessee: Venue and Local Attractions

Our meeting venue this year is the Crowne Plaza-Knoxville. Just 20 minutes from McGhee Tyson Airport, the Crowne Plaza is situated in a superb location in downtown Knoxville that is convenient for touring, dining, and shopping. Walk to the Old City and Market Square to enjoy over 30 eateries, nightlife, shopping, and outdoor concerts.

Knoxville offers visitors the perfect mix of small town charm and big city fun. The city is on the banks of the Tennessee River and in the foothills of the Great Smoky Mountains. Surrounded by unsurpassed natural beauty, visitors can easily travel to the six national parks located within 90 miles of the city. Knoxville has something for everyone. Shoot a few hoops and explore the interactive exhibits at the Women's Basketball Hall of Fame, visit the world class Knoxville Zoo, tour the University of TN, enjoy the local history, nightlife, dining, shopping, museums, or take advantage of the numerous parks and gardens located within the heart of the city. The beauty and natural resources surrounding Knoxville mean limitless opportunities for fun and adventure.

We are planning a BBQ and Bluegrass cruise on the Tennessee River for an optional Sunday evening activity. Participants will have the opportunity to take in the scenery and enjoy live entertainment while they cruise the river on an authentic paddle wheel riverboat. The Tennessee River takes its name from the Cherokee Indian village Tenasi and is the largest river system in the Southeast. Today it is possible to go anywhere in the world by following the Tennessee downstream until you reach the Ohio and into the Mississippi, and all the way to the Gulf of Mexico. Our cruise will be approximately 2 hours with a full BBQ buffet and features one of Knoxville's finest "*banjo pickin-foot stompin-hand clappin"* Bluegrass bands.

An exciting Scientific Program that will stimulate thought, provoke discussion, and inspire is being planned. Special sessions include symposia on teaching parasitology, veterinary parasitology, a second Associate Editor's symposium, as well as the 2009 Clark P. Read Mentor Lecture and the Barclay-McGee Lecture. In addition, we will have some traditional favorites such as the annual Coccidiosis Conference and the annual Student Auction.

Knoxville Tennessee is the place where past, present, and future come together in the shadow of the scenic Cumberland Plateau and the foothills of the biodiversity rich Great Smoky Mountains. We know your experience will be memorable. Mark the calendar and make your plans to attend the 84th Annual Meeting now.

Table 1: Numbers of threatened species by major groups of organisms (1996–2008)

	Estimated Number of described species	Number of species evaluated by 2008	Number of threatened species in 1996/98	Number of threatened species in 2000	Number of threatened species in 2002	Number of threatened species in 2003	Number of threatened species in 2004	Number of threatened species in 2006	Number of threatened species in 2007	Number of threatened species in 2008	Number threatened in 2008, as % of species described	Number threatened in 2008, as % of species evaluated**
Vertebrates												
Mammals	5,488	5,488	1,096	1,130	1,137	1,130	1,101	1,093	1,094	1,141	21%	21%
Birds	9,990	9,990	1,107	1,183	1,192	1,194	1,213	1,206	1,217	1,222	12%	12%
Reptiles	8,734	1,385	253	296	293	293	304	341	422	423	5%	31%
Amphibians*	6,347	6,260	124	146	157	157	1,770	1,811	1,808	1,905	30%	30%
Fishes	30,700	3,481	734	752	742	750	800	1,171	1,201	1,275	4%	37%
Subtotal	**61,259**	**26,604**	**3,314**	**3,507**	**3,521**	**3,524**	**5,188**	**5,622**	**5,742**	**5,966**	**10%**	**22%**
Invertebrates												
Insects	950,000	1,259	537	555	557	553	559	623	623	626	0%	50%
Molluscs	81,000	2,212	920	938	939	967	974	975	978	978	1%	44%
Crustaceans	40,000	1,735	407	408	409	409	429	459	460	606	2%	35%
Corals	2,175	856	1	1	1	1	1	1	4	235	11%	27%
Arachnids	98,000	32	11	11	11	11	11	11	11	18	0%	56%
Velvet Worms	165	11	6	6	6	9	9	9	9	9	5%	82%
Horseshoe Crabs	4	4	0	0	0	0	0	0	0	0	0%	0%
Others	61,040	52	9	9	9	9	9	24	24	24	0%	46%
Subtotal	**1,232,384**	**6,161**	**1,891**	**1,928**	**1,932**	**1,959**	**1,992**	**2,102**	**2,109**	**2,496**	**0.20%**	**41%**
Plants												
Mosses	16,000	95	---	80	80	80	80	80	80	82	1%	86%
Ferns and allies	12,838	211	---	---	---	111	140	139	139	139	1%	66%
Gymnosperms	980	910	142	141	142	304	305	306	321	323	33%	35%
Dicotyledons	199,350	9,624	4,929	5,099	5,202	5,768	7,025	7,086	7,121	7,122	4%	74%
Monocotyledons	59,300	1,155	257	291	290	511	771	779	778	782	1%	68%
Green Algae	3,962	2	---	---	---	---	---	---	0	0	0%	0%
Red Algae	6,076	58	---	---	---	---	---	---	9	9	0%	16%
Subtotal	**298,506**	**12,055**	**5,328**	**5,611**	**5,714**	**6,774**	**8,321**	**8,390**	**8,448**	**8,457**	**3%**	**70%**
Others												
Lichens	17,000	2	---	---	---	2	2	2	2	2	0%	100%
Mushrooms	30,000	1	---	---	---	---	---	1	1	1	0%	100%
Brown Algae	3,040	15	---	---	---	---	---	---	6	6	0%	40%
Subtotal	**50,040**	**18**	**---**	**---**	---	**2**	**2**	**3**	**9**	**9**	**0.02%**	**50%**
TOTAL	**1,642,189**	**44,838**	**10,533**	**11,046**	**11,167**	**12,259**	**15,503**	**16,117**	**16,308**	**16,928**	**1%**	**38%**

Source:

http://www.iucnredlist.org/documents/2008RL_stats_table_1.pdf.v1223294385

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Note to Members -
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